

Abstract Submitted
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Turbulent density, Reynolds stress and vorticity measurements in the COMPASS tokamak edge plasma ANAHEED NAJMZADEH¹, UC San Diego — A novel probe array that combines Langmuir probes with floating ball-pen probes is described. The array measures the radial profiles of density fluctuations, poloidal and parallel Reynolds stresses, and turbulent vorticity, together with time-averaged density, electron temperature and plasma potential. The array was used to make these measurements in the COMPASS tokamak device in Ohmically heated limiter and diverted discharges across a range of plasma densities and a limited scan of plasma currents. The linkage and correlation between density and vorticity fluctuations are compared with the theoretical predictions of potential vorticity mixing across the edge plasma ExB shear layer. In addition, the variation of the poloidal Reynolds stress and the ExB shear layer with plasma conditions is examined. Preliminary observations show a systematic degradation of the edge shear layer during a density ramp. Research supported by U.S. National Science Foundation Grant 1928843.

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